A NEW SPECIES OF *GEHYRA* (REPTILIA: GEKKONIDAE) FROM NORTHERN WESTERN AUSTRALIA

by MAX KING*

Summary

KING, M. (1984) A new species of *Gehyra* (Reptilia: Gekkonidae) from northern Western Australia. *Trans. R. Soc. S. Aust.* **108**(2), 113-117, 12 June, 1984.

Specimens of an undescribed form of *Gehyra* are compared with populations of *G. australis* found in adjacent areas of the Kimberley in Western Australia and are described as a new species of the *G. australis* species group.

KEY WORDS: New species, *Gehyra*, Gekkonidae, Kimberley.

Introduction

A karyotypic analysis of population of the widely distributed, and morphologically diverse Australian gekko *Gehyra australis*, revealed considerable chromosomal heterogeneity. Seven chromosome races occur in northern Australia: 2n = 44, 2n = 42A, 2n = 42B, 2n = 42C, 2n = 40A, 2n = 40B and 2n = 38 (King 1982, King 1983a). Each chromosome race is allopatrically distributed, either geographically or because of habitat preferences. These isolated forms are chromosomally monomorphic for a series of fixed differences. In areas of possible contact between chromosome races, there is no evidence of hybridization.

A subsequent morphometric analysis of the 2n = 42A, 2n = 42B, 2n = 42C, 2n = 40A and 2n = 38 chromosome races (King 1982, King 1983b) has greatly modified our concept of *Gehyra australis*. This species was redefined and its new distribution was shown to approximate that of the 2n = 40A chromosome race (King 1983b). It is therefore now restricted to the northern sector of the Northern Territory, and a small area of northern Western Australia. *G. dubia* Macleay was resurrected to accommodate the 2n = 42C chromosome race and the following new species were described: *G. pamela* (2n = 42A); *G. robusta* (2n = 42B) and *G. borroloola* (2n = 38) (King 1982, 1983b). Too few specimens of the 2n = 40B and 2n = 44 races were available for a taxonomic reappraisal of these forms to be made.

The present paper describes the results of a morphometric analysis of specimens of the 2n = 44 chromosome race of *Gehyra*, and of populations of *G. australis sensu stricto*, from northern Western Australia. A new species is described.

Materials and Methods

Three specimens karyotyped by King (1983a) were measured, as were an additional seven museum specimens which were morphologically identifiable as belonging to the 2n = 44 chromosome race. These animals were compared with 27 individuals of *G. australis* from adjacent areas of the Kimberley. The distribution of the animals examined is shown in Fig. 1.

All specimens were measured with micrometer-adjusted callipers and a steel rule. Dimensions taken in this study are those of King (1983b).

Results

The specimens analysed fell into two unambiguously distinguishable morphological groups. One of these groups comprised typical *G. australis*, although certain minor variations

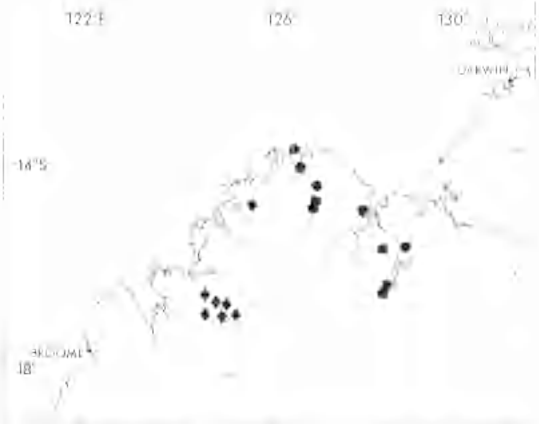

Fig. 1. Distribution of *Gehyra occidentalis* (diamonds) and *G. australis* (black spots).

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(see later), were detected. The second group of ten specimens represented an undescribed form, some of which had been karyotyped by King (1983a) and shown to have 2n = 44. This form is described here.

Gehyra occidentalis sp. nov.
FIGS 1–5

Gehyra australis part.: King 1983a p. 723.

Gehyra australis part.: King 1983b in press.

Diagnosis: Gehyra occidentalis is distinguished from other members of the *G. australis* species group by the following combination of characteristics. It differs from *G. baliola* in lacking a 'U' shaped rostral scale, and by the absence of skin folds on the back of each hind limb. It is distinguished from *G. xenopus* by the absence of basal granules dividing the fourth toe subdigital lamellae. *G. occidentalis* is distinguished from *G. australis*, *G. robusta* and *G. dubia* by having longer postmental scales. Males of these species and of *G. borroloola* have fewer than 19 preanal pores, whereas, *G. occidentalis* has 23–49 pores. *G. occidentalis* is most similar to *G. pamela* from which it is distinguished by the following characteristics: the rostral scale is deep and its dorsal surface strongly gabled, in *G. occidentalis*, whereas it is oblong and slightly gabled in *G. pamela*; when viewed from below the rostral scale projects forward of the snout line in *G. pamela*, but not in *G. occidentalis*; the background colouration of the back pattern is chocolate brown in *G. occidentalis* and grey in *G. pamela*. In those specimens of *G. occidentalis* with pronounced patterning, bands of black spots predominate in size over the interbands of lighter spots. In *G. pamela* the bands of off-white spots form the predominant coloured bands, the darker spots being reduced in size.

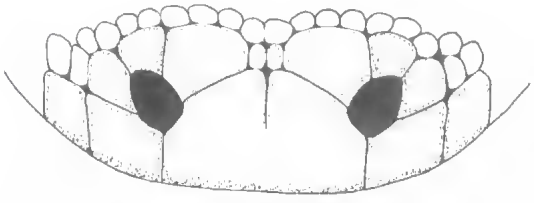

Fig. 2. Diagrammatic representation of the snout of *G. occidentalis* showing the steeply gabled rostral scale, and two small internasals lying between the larger internasals.

Description:

Holotype: Male W.A.M. R83711. Collected on a rock face at night in Manning Gorge, W.A. (16°44'S, 125°57'E) by D. R. King on 3.xii.1980.

Head: Width 11.0 mm, depth 6.1 mm, length 14.0 mm. Snout 6.1 mm long from tip of rostral scale to anterior margin of orbit. Face and head covered by small rounded scales, those on face larger than on top of head. 33 interorbital scales. Nostril surrounded by rostral, internasal, two posterior nasal and first supralabial scales. Rostral scale oblong and relatively deep. Dorsal surface of rostral steeply gabled to midline apex (Fig. 2). Median groove on rostral extending for 1/3 of scale depth from middle of dorsal surface. Nostrils separated by two large internasal scales. Two very small internasal scales located at apex of rostral separating large internasal scales (Fig. 2). Nine supralabial and eight infralabial scales on each side of jaw. Mental scale triangular. Postmental scales long (3.3 mm) and not in contact with second infralabial scale (Fig. 4b).

Body: Depressed, slender build (Fig. 3). Snout vent length 59.4 mm, tail length 65.00 mm. Tail round in section tapering into a point. Larger scales on ventral surface. Dorsal surface of body covered by small rounded scales. Scales on ventral surface larger and flatter than those on dorsal surface. 126 scales around circumference of abdomen in midbody. Nine subdigital lamellae on dilated section of fourth toe. Subdigital lamellae divided along midline (Fig. 4e). 29 preanal pores in chevron formation in front of cloaca (Fig. 4d). Two postnatal tubercles in cluster at base of tail on each side.

Colouration: Background dorsal colouration chocolate brown in life. Head and faces with alternate very dark brown and off-white spots, separated by background colour. Two parallel eyestripes extending from snout and finishing above ear. Back pattern consisting of bands of black spots (which have coalesced to form

Fig. 3. Holotype of *G. occidentalis* in life. Bar scale = 10 mm.

bars) interspaced by bands of off-white spots. Bands of spots separated by chocolate brown background. Alternate coloured bands like those on the dorsal surface extending along length of tail. Limbs spotted with black and off white (Fig. 3).

Paratypes: There are 9 paratypes: W.A.M. R83712 14°53′S, 125°45′E. W.A. 27.vii.82. collected by J. Dell, W.A.M R83713 32 km E of turnoff to Napier Downs on Gibb River road, W.A. 27.viii.80 collected by D. King, W.A.M. R45009 Napier Range 170°18′S, 124°50′E W.A. 1.xi.73 collected by W. H. Butler, W.A.M. R70587 11.5 km S.E. of Mt Percy, W.A. 17.v.80 collected by G. Harold, P. Griffin and G. Barron. W.A.M. R70553 8.6 km S.E. of Mt Amy (Napier Downs) W.A. 18.v.80 collected by G. Harold, P. Griffin and G. Barron, W.A.M. R70664 8.6 km S.E. of Mt Amy (Napier Downs) W.A. 18.v.80 collected by G. Harold, P. Griffin and G. Barron, W.A.M. R58757–9 Wombarella Creek, Napier Range, W.A. 9.xi.76 collected by R. E. Johnstone.

Distribution: The known distribution of *G. occidentalis* is restricted to the western section of the Kimberley division of W.A. Populations extend from the Mitchell Plateau in the north to the Napier Range in the south. *G. occidentalis* is an exclusively rock dwelling form, most specimens having been collected on rock faces at night.

Variation: The range of variation in a series of morphometric and meristic characteristics of *G. occidentalis* and *G. australis* from the Kimberley, are shown in Table 1. Specimens of *G. occidentalis* always have longer postmental scales than those of *G. australis* of comparable snout-vent length (Fig. 5). Males of *G. occidentalis* are also readily distinguished from *G. australis* by the higher number of preanal pores (23–49 compared to 11–19). Moreover, *G. occidentalis* has fewer fourth toe subdigital lamellae (9–10) than *G. australis* (10–12). The lamellae are completely divided in *G. occidentalis* but only depressed in the midline in *G. australis* (Fig. 4c).

The 27 specimens of *G. australis* examined here show certain differences from the 49 N.T. animals analysed by King (1983b). Kimberley specimens tend to be larger (x S.V.L. 68.7 mm compared with x 60.6 mm) although this may be due to a sampling bias. Specimens from the Kimberley are slimmer in appearance and often have eyestripes, a feature absent from the N.T. populations. They also have more preanal pores in males ($\bar{x}$ = 16.5 compared to $\bar{x}$ = 13.5), and a larger number of subdigital lamellae on the dilated section of the fourth toe ($\bar{x}$ = 11.4, range 10–12 compared with $\bar{x}$ = 10, range 9–12). *G. australis* were found on human habitation or on trees in the N.T. whereas those in the Kimberley were also found on rock outcrops. These differences may

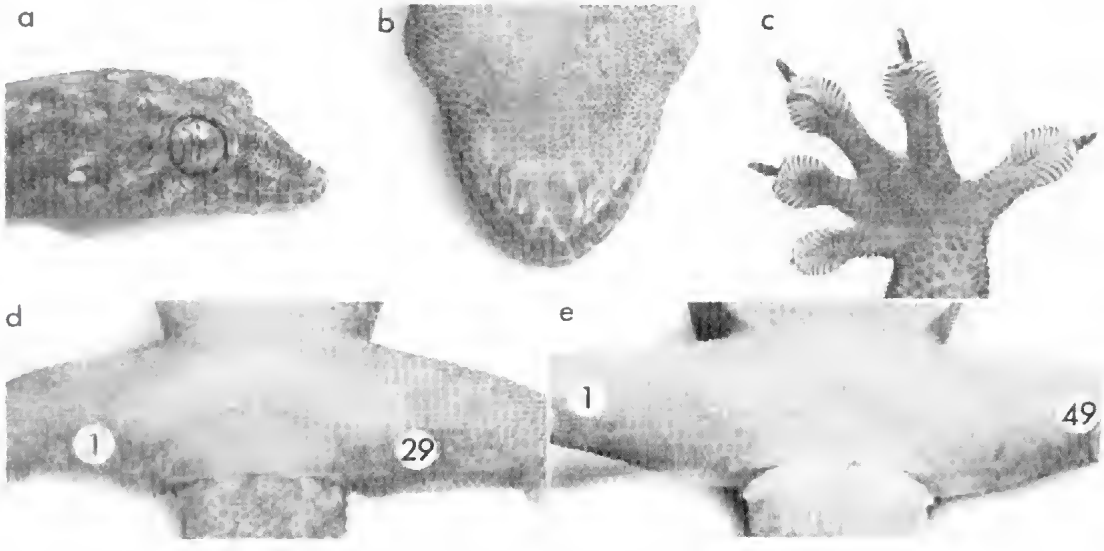

Fig. 4a. Side view of the head of the holotype of *Gehyra occidentalis.*
b. A ventral view of the snout of the holotype showing large postmental scales.
c. Ventral view of the foot of the holotype showing divided subdigital lamellae.
d. Ventral view of the holotype with 29 preanal pores indicated.
e. Ventral view of a specimen of *G. occidentalis* with 49 preanal pores indicated.

TABLE 1. *Morphometric and meristic characteristics of* G. occidentalis *and* G. australis. *Means with ranges in parentheses.*

	N	snout vent	tail length	snout length	postmental length	head width	head depth	head length
		mm	mm	mm	mm	mm	m	mm
G. occidentalis	10	58.9 (48–67.3)	— (up to 64)	6.8 5.6–7.5)	3.5 (2.9–3.9)	12.2 (10.1–14.2)	7.0 (5.9–8.3)	15.2 (12.9–16.5)
		midbody scales	interorbital scales	preanal pores	postanal tubercles	subdigital lamellae	supra-labials	infra-labials
G. occidentalis		112.2 (96–126)	32 (26–36)	30(6♂) (23–49)	2.5(6♂) (2–4)	9.7 (9–10)	9.2 (8–11)	8.4 (7–10)
	N	snout vent	tail length	snout length	postmental length	head width	head depth	head length
		mm	mm	mm	mm	mm	mm	mm
G. australis	27	68.7 (58.6–75.0)	— (up to 84)	7.3 (5.7–8.1)	3.0 (2.1–3.5)	13.0 (11.2–14.6)	7.7 (6.7–8.7)	16.6 (14.1–18.0)
		midbody scales	interorbital scales	preanal pores	postanal tubercles	subdigital lamellae	supra-labials	infra-labials
G. australis		117.6 (102–131)	32.4 (27–37)	16.5(18♂) (11–19)	2.7(18♂) (1–3)	11.4 (10–12)	10.3 (9–12)	8.7 (7–10)

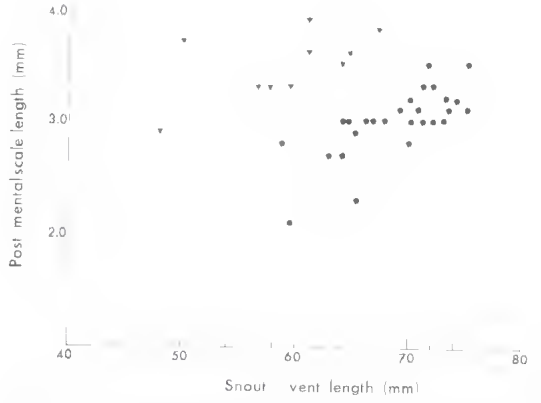

Fig. 5. Postmental scale length plotted against snout-vent length for specimens of *G. occidentalis* (triangles) and *G. australis* (spots).

simply reflect clinical variation within *G. australis*; they are much less profound than the differences which separate *G. occidentalis* from *G. australis*.

G. occidentalis is morphologically most similar to *G. pamela* (King 1982). *G. pamela* is found on the Arnhemland escarpment and probably throughout Arnhemland in the N.T. Both *G. occidentalis* and *G. pamela* have long postmental scales, and a higher number of preanal pores than *G. australis* (up to 28 in *G. pamela*, up to 49 in *G. occidentalis*) (Fig. 4e). A further difference between these species is seen in the morphology of the rostral scale which is deep with a strongly gabled dorsal surface in *G. occidentalis*, and oblong and only slightly gabled in *G. pamela*. When viewed from below, the rostral area projects anteriorly to the snout line in *G. pamela* but not in *G. occidentalis*. In *G. occidentalis* a series of 0(2), 1(4) or 2(4) small internasal scales occur between the large internasals, at the apex of the rostral (Fig. 2). Sometimes one small internasal is seen in *G. pamela*.

G. occidentalis is also distinguished from *G. pamela* by its chocolate brown rather than grey colouration. Some specimens of *G. occidentalis* lack a pronounced back pattern; others are strongly marked, with bands of black spots predominating. In *G. pamela* the dark colours are much less pronounced and the bands of light spots predominate (see Fig. 4a, King 1982). The back pattern of the holotype (Fig. 3) is similar to that of some specimens of *G. borroloola*, but distinction from that species can be readily made by the rostral shape, and greater number of preanal pores in males. The only other species of *Gehyra* which has a back pattern similar to *G. occidentalis* is *G. cognatus* (Rudiger-Borner & Schuttler, 1982). This species, based on a single specimen shares many characteristics with *G. pilbara*, including the presence of 8 subdigital lamellae (although they are grooved, not divided), 8 supralabials, 6 infralabials and a deepset, blunt-snouted head. The animal was apparently

captured with specimens of *G. pilbara* and on the basis of the published information is probably an unusual *G. pilbara*. In any case, it is not a member of the *G. australis* species complex.

Etymology: The specific name *G. occidentalis* is derived from the Latin "occidentalis" meaning western, and refers to the distribution of this species.

Other material examined: W.A.M. R70153–4, R70156, R70146–8 28 km S.E. Kununurra, W.A., 21.iv.1980. W.A.M. R60345 35 km S.W. Kununurra (Saw Rg.), W.A., 2.vi.1978. W.A.M. R70688 3.5 km N.W. New Lissadell H.S., W.A., 6.v.1980. W.A.M. R44037 Sir Graham Moore Is., Bonaparte Arch., W.A., 2.vii.1973. W.A.M. R27571–4 Parry Ck, W.A., 20.vii.1965. W.A.M. R42788–90 Old Lissadell H.S., W.A., 16.x.1971 W.A.M. R50776–7 Drysdale R. Nat. Pk. 14°40′S, 127°00′E, 9–12.viii.1975. W.A.M. R50794 Drysdale R. Nat. Pk. 14°40′S. 127°00′E, 12.viii.1975. W.A.M. R70451 10.7 km S.W. New Lissadell H.S., W.A., 26.iv.1980. W.A.M. R64919 Drysdale R. Nat. Park 15°08′S, 126°55′E, 3.viii.1975. W.A.M. R64920 Drysdale R. Nat. Pk. 15°03′S, 126°44′E, 18.viii.1975. W.A.M. R50807 Drysdale R. Nat. Pk. 14°40′S, 127°00′E, 14.viii.1975. W.A.M. R50869 Drysdale R. Nat. Pk. 15°02′S, 126°49′E, 18.viii.1975. W.A.M. R50595 Drysdale R. Nat. Pk. 14°46′S, 127°05′E, 14.viii.1975. W.A.M. R50960 Drysdale R. Nat. Pk. 15°02′S, 125°49′E, 14.vii.1975. W.A.M. R13582 Kalumburu, W.A., 26.vi 1980.

The **Gehyra australis** species group

The *G. australis* species group now comprises *G. baliola*, *G. xenopus*, *G. borroloola*, *G. australis*, *G. robusta*, *G. dubia*, *G. pamela* and *G. occidentalis*.

Karyotypic analysis has shown that these large Northern Australian forms, while being in the same lineage as the other Australian *Gehyra*, have evolved as an independent group (King 1982, 1983a). Their general morphological similarity is accentuated by the fact that six of the species (*G. australis*, *G. borroloola*, *G. robusta*, *G. dubia*, *G. pamela* and *G. occidentalis*) were, until recently, all included as *G. australis*. Adult specimens of this species complex have a snout-vent length of 50–91 mm and at least 9 subdigital lamellae on the dilated area of the fourth toe.

Acknowledgments

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